APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/030,206	12/31/2001	Peter Kenington	46309/268337 (23890)	9002

			EXAMINER
22186	7590	04/19/2005	TORRES, JUAN A

MENDELSOHN AND ASSOCIATES PC
1515 MARKET STREET
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ART UNIT	PAPER NUMBER
2631	

DATE MAILED: 04/19/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

	Application No.	Applicant(s)
Office Action Summary	10/030,206	KENINGTON, PETER
	Examiner	Art Unit
	Juan A. Torres	2631

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on <u>31 December 2001</u>.

2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) <u>51-72</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) <u>51-72</u> is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☒ The drawing(s) filed on <u>31 December 2001</u> is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a) ☒ All b) ☐ Some * c) ☐ None of:

      1. ☒ Certified copies of the priority documents have been received.

      2. ☐ Certified copies of the priority documents have been received in Application No. _____.

      3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date <u>04-29-2002</u>.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

Priority

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which

papers have been placed of record in the file.

Drawings

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5)

because they do not include the following reference sign(s) mentioned in the

description: "1" in pages 4 (2 times), 6 (2 times), 7 and 8. Corrected drawing sheets in

compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid

abandonment of the application. Any amended replacement drawing sheet should

include all of the figures appearing on the immediate prior version of the sheet, even if

only one figure is being amended. Each drawing sheet submitted after the filing date of

an application must be labeled in the top margin as either "Replacement Sheet" or "New

Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner,

the applicant will be notified and informed of any required corrective action in the next

Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States

only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claim 51-57, 59-68 and 70-72 are rejected under 35 U.S.C. 102(e) as being anticipated by Leyendecker (US 5867065).

As per claim 51 Leyendecker discloses a lineariser for reducing distortion of an output signal of signal handling equipment by processing a raw signal with data selected from a store in response to the amplitude and frequency content of the raw signal (figure 6 column 10 lines 16-39).

As per claim 52 Leyendecker discloses that the data comprises coefficients and the distortion reduction processing comprises modification of the raw signal using the coefficients (Figure 6 column 10 lines 16-39).

As per claim 53 Leyendecker discloses that the modification to the raw signal comprises multiplication of coefficients with amplitude values of the raw signal (Figure 11 column 12 lines 41-49).

As per claim 54 Leyendecker discloses that the store comprises a group of look-up tables, each table corresponding to a component of the raw signal having a different frequency or band of frequencies, and each table comprising a table of coefficients, each coefficient associated with a value of the amplitude of the component of the table (figure 8 and figure 12 column 14 lines 16-34).

As per claim 55 Leyendecker discloses a retriever for retrieving coefficients from the group of look-up tables on the basis of amplitude values of and frequency content of components of the raw signal (figure 12 block 1201 column 13 line 66 column 14 line 9).

As per claim 56 Leyendecker discloses that the coefficients are interpolated for amplitude and/or frequency values which do not have an associated coefficient in the group of look-up tables (figure 12 block 1205 column 14 lines 43-45).

As per claim 57 Leyendecker discloses a divider for dividing the raw signal into a number components having different frequencies or bands of frequencies (figure 12 block 1201 column 14 lines 16-34).

As per claim 59 Leyendecker discloses a combiner for combining components of the raw signal having different frequencies or bands of frequencies to form a reassembled signal (figure 12 block 1207 column 14 lines 45-48).

As per claim 60 Leyendecker discloses an adaptor for adapting the data in the store to compensate for changes in the distortion characteristics of the signal handling equipment (figure 6 block 607 column 10 lines 22-32).

As per claim 61 Leyendecker discloses a monitor for monitoring feedback from the output of the signal handling equipment (figure 6 block 613 and figure 15 block 1026 column 20 lines 19-21).

As per claim 62 Leyendecker discloses a method for reducing distortion of an output signal of signal handling equipment the steps of selected from a store in response to the amplitude and frequency content of the raw signal (figure 6 block 603 column 10 lines 16-19), and using the data in distortion reduction processing of the raw signal (figure 6 block 603 column 10 lines 19-39).

As per claim 63 Leyendecker discloses that the data comprises coefficients and the distortion reduction processing comprises modification of the raw signal using the coefficients (Figure 6 column 10 lines 16-39).

As per claim 64 Leyendecker discloses that the modification to the raw signal comprises multiplication of coefficients with amplitude values of the raw signal (Figure 11 column 12 lines 41-49).

As per claim 65 Leyendecker discloses that the store comprises a group of look-up tables, each table corresponding to a component of the raw signal having a different frequency or band of frequencies, and each table comprising a table of coefficients, each coefficient associated with a value of the amplitude of the component of the table (figure 8 and figure 12 column 14 lines 16-34).

As per claim 66 Leyendecker discloses the step of retrieving coefficients from the group of look-up tables on the basis of amplitude values of and frequency content of components of the raw signal (figure 12 block 1201 column 13 line 66 column 14 line 9).

As per claim 67 Leyendecker discloses the step of interpolating coefficients for amplitude and/or frequency values which do not have an associated coefficient in the group of look-up tables (figure 12 block 1205 column 14 lines 43-45).

As per claim 68 Leyendecker discloses the step of dividing the raw signal into a number components having different frequencies or bands of frequencies (figure 12 block 1201 column 14 lines 16-34).

As per claim 70 Leyendecker discloses the step of a combining components of

the raw signal having different frequencies or bands of frequencies to form a

reassembled signal (figure 12 block 1207 column 14 lines 45-48).

As per claim 71 Leyendecker discloses the step of adapting the data in the store

to compensate for changes in the distortion characteristics of the signal handling

equipment (figure 6 block 607 column 10 lines 22-32).

As per claim 72 Leyendecker discloses that the adapting step comprises the step

of monitoring feedback from the output of the signal handling equipment (figure 6 block

613 and figure 15 block 1026 column 20 lines 19-21).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

Claim 58 and 69 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Leyendecker (US 5867065) as applied to claim 57 above, and further in view of

Meghdadi (US 6216100).

As per claim 58 Leyendecker discloses claim 57. Leyendecker doesn't disclose a

transformer for transforming the raw signal from the time domain to the frequency

domain to produce a spectrum of the amplitude of the raw signal against frequency.

Meghdadi discloses a transformer for transforming the raw signal from the time domain

to the frequency domain to produce a spectrum of the amplitude of the raw signal

against frequency (figure 20 column 10 lines 12-19). Leyendecker and Meghdadi are analogous art because they are from the same field of endeavor. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to incorporate the transformer from time domain to frequency domain disclosed by Meghdadi in the lineariser disclosed by Leyendecker. The suggestion/motivation for doing so would have been to analyze the multiple-frequency input signal x into frequency components (Meghdadi column 10 lines 14-15). Therefore, it would have been obvious to combine Leyendecker and Meghdadi to obtain the invention as specified in claim 58.

        As per claim 69 Leyendecker discloses claim 68. Leyendecker doesn't disclose the step of transforming the raw signal from the time domain to the frequency domain to produce a spectrum of the amplitude of the raw signal against frequency. Meghdadi discloses the step of transforming the raw signal from the time domain to the frequency domain to produce a spectrum of the amplitude of the raw signal against frequency (figure 20 column 10 lines 12-19). Leyendecker and Meghdadi are analogous art because they are from the same field of endeavor. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to incorporate the step of transforming from the time domain to the frequency domain to produce a spectrum of the amplitude against frequency disclosed by Meghdadi in the lineariser disclosed by Leyendecker. The suggestion/motivation for doing so would have been to look for the presence of energy in a prescribed portion of the frequency spectrum (Meghdadi

column 10 lines 14-15). Therefore, it would have been obvious to combine Leyendecker and Meghdadi to obtain the invention as specified in claim 69.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Belcher (US 5760646) discloses a feed-forward correction loop with adaptive predistortion injection for linearization of RF power amplifier including a spectrum analyzer. Belcher (US 5892397) discloses an adaptive compensation of RF amplifier distortion by injecting predistortion signal derived from respectively different functions of input signal amplitude. Valentine (US 5748678) discloses a power amplifier that amplifies signals fed from a modulator and a feedback loop samples the output signals of the power amplifier and adjusts at least one of the amplitude and phase of the baseband signals to compensate for distortion introduced by the power amplifier. Con (US 5732333) discloses a linear transmitter using predistortion including a modulator, a predistorter, a digital quadrature modulator, an upconverter, a power amplifier, and an antenna; in addition, the transmitter has a feedback loop including a coupler, a downconverter, a digital quadrature demodulator, and a trainer. Chow (US 6614854) discloses a system and method for adaptive predistortion.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Juan A. Torres whose telephone number is (571) 272-3119. The examiner can normally be reached on Monday-Friday 9:00 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad H. Ghayour can be reached on (571) 272-3021. The fax phone

number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Juan Alberto Torres
3-11-2005

MOHAMMED GHAYOUR
SUPERVISORY PATENT EXAMINER